

CLAIMS

What is claimed is:

1. An electroplating apparatus comprising:
 - a reservoir for holding an electrolyte fluid;
 - an anode and a cathode for holding a wafer provided in said reservoir;
 - an electrical pathway provided between said cathode and said anode; and
 - a shield provided between said cathode and said anode.
2. The electroplating apparatus of claim 1 wherein said shield comprises a generally ring-shaped shield body.
3. The electroplating apparatus of claim 2 further comprising an electrically-conductive material provided on said shield body.
4. The electroplating apparatus of claim 3 wherein said electrically-conductive material comprises copper.
5. The electroplating apparatus of claim 3 further comprising a shield current source electrically connected to said shield for selectively applying a negative charge to said shield.

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6. The electroplating apparatus of claim 2 wherein said shield body comprises an electrically non-conductive material.

7. An electroplating apparatus comprising:

a reservoir for holding an electrolyte fluid;
an anode and a cathode for holding a wafer provided in said reservoir;

an electrical pathway provided between said cathode and said anode; and

a shield comprising a generally plate-shaped shield body provided between said cathode and said anode.

8. The electroplating apparatus of claim 7 further comprising an electrically-conductive material provided on said shield body.

9. The electroplating apparatus of claim 8 wherein said electrically-conductive material comprises copper.

10. The electroplating apparatus of claim 8 further comprising a shield current source electrically connected to said shield for selectively applying a negative charge to said shield.

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11. The electroplating apparatus of claim 7 wherein said shield body comprises an electrically non-conductive material.

12. A method of electroplating a metal on a wafer, comprising:

providing a reservoir containing an electrolyte fluid;

providing an anode and a cathode in said reservoir;

providing an electrical pathway between said cathode and said anode;

providing a shield in said electrolyte fluid between said cathode and said anode; and

applying a current to said cathode and said anode.

13. The method of claim 12 wherein said shield comprises a generally ring-shaped shield body.

14. The method of claim 13 further comprising an electrically-conductive material provided on said shield body.

15. The method of claim 14 wherein said electrically-conductive material comprises copper.

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16. The method of claim 14 further comprising a shield current source electrically connected to said shield for selectively applying a negative charge to said shield.

17. The method of claim 16 further comprising selectively applying said negative charge to said shield for electroplating a metal onto said shield and applying a positive charge to said shield for releasing metal cations from said shield into said electrolyte fluid.

18. The method of claim 13 wherein said shield body comprises an electrically non-conductive material.

19. The method of claim 12 wherein said shield comprises a generally plate-shaped shield body.

20. The method of claim 19 further comprising an electrically-conductive material provided on said shield body.

21. The method of claim 20 wherein said electrically-conductive material comprises copper.

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22. The method of claim 20 further comprising a shield current source electrically connected to said shield for selectively applying a negative charge to said shield.

23. The method of claim 19 wherein said shield body comprises an electrically non-conductive material.

24. The method of claim 22 further comprising selectively applying said negative charge to said shield for electroplating a metal onto said shield and applying a positive charge to said shield for releasing metal cations from said shield into said electrolyte fluid.